

Date: Fri, 12 Aug 94 04:30:29 PDT  
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>  
Errors-To: Ham-Homebrew-Errors@UCSD.Edu  
Reply-To: Ham-Homebrew@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Homebrew Digest V94 #232  
To: Ham-Homebrew

Ham-Homebrew Digest                      Fri, 12 Aug 94                      Volume 94 : Issue    232

Today's Topics:

        6 Meter Antenna Ideas Wanted  
        DSP for the HomeBrewer?? (part2)  
        Freq standard from TV Colorburst subcarrier  
        Handheld and Saltwater...  
        HELP: Son needs advice on IR detector  
        Homebrew Global Positioning System (GPS)  
        Need low thermal coefficient resistors  
        Plastic vs. Metal Transistors  
        Question about power supply for HTX-202.  
        RCI 2950 AND ITS CW NOTE?  
        regenerative sets and selectivity (3 msgs)  
        SWR calculation needed....

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>  
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.  
-----

Date: Thu, 11 Aug 1994 17:57:54 GMT  
From: newsgate.melpar.esys.com!melpar!phb@uunet.uu.net  
Subject: 6 Meter Antenna Ideas Wanted  
To: ham-homebrew@ucsd.edu

mmjjmm@post.its.mcw.edu (Michael Malloy) writes:

>I would like to build a 6 Meter antenna for a new rig. Would like ideas on  
>both FM and SSB.

        See the August, 1979 issue of QST for an ultra-cheap, 2-element

6-meter quad. Easy to build, works great, and I got a number of nice letters from other hams who liked it as well (I wrote the article). The title of the article is "The Carpenter's Delight."

If you don't have access to older QSTs, I'll send you a photocopy of the article.

Paul, K4MSG

P.S. I used it on SSB, but you could turn the feed 90 degrees and use it on FM (vertical polarization).

-----  
Date: 10 Aug 1994 17:31:30 GMT  
From: news.cerf.net!gopher.sdsc.edu!news.tc.cornell.edu!  
travelers.mail.cornell.edu!news.kei.com!yeshua.marcam.com!zip.eecs.umich.edu!  
newsxfer.itd.umich.edu!europa.eng.gtefsd.@@ihnp4.ucsd.edu  
Subject: DSP for the HomeBrewer?? (part2)  
To: ham-homebrew@ucsd.edu

In article <329jec\$4ub@news.delphi.com> dwilkins@news.delphi.com  
(DWILKINS@DELPHI.COM) writes:  
>Path: gaia.ucs.orst.edu!flop.ENG.0RST.EDU!reuter.cse.ogi.edu!hp-cv!hp-pcd!  
sdd.hp.com!cs.utexas.edu!natinst.com!news.dell.com!swrinde!pipex!sunic!  
trane.uninett.no!eunet.no!nuug!EU.net!uunet!news.delphi.com!news.delphi.com!not-  
for-mail  
>From: dwilkins@news.delphi.com (DWILKINS@DELPHI.COM)  
>Newsgroups: rec.radio.amateur.homebrew  
>Subject: Re: DSP for the HomeBrewer?? (part2)  
>Date: 10 Aug 1994 04:01:16 -0000  
>Organization: Delphi Internet Services Corporation  
>Lines: 13  
>Message-ID: <329jec\$4ub@news.delphi.com>  
>References: <ahall-0808941758330001@ruger-68.slip.uiuc.edu>  
>NNTP-Posting-Host: news.delphi.com  
>You might want to try the DSP Starters kit from TI. It is a small board  
>based on the TMS320C26 DSP, with debugger and assembler included. There  
>are some sample programs on the disk that implement a spectrum analyzer.  
>  
>For more info:  
>TI DSP Hotline  
>1-713-274-2320  
>  
>or FTP to ti.com go to /mirrors/tms320bbs and peruse.  
>

>N-Joy  
>ke4jqv  
>dwilkins@delphi.com

Homebrewing a 100+ pin DSP would be a lot of fun - my first entry into DSP was to wire wrap the W9GR project in QST. I found that the DSP would run quite happily with 150ns 2764 EPROMS, but thats only a 40 pin package.

The TI DSK is quite a powerful engine - there also now are nice memory expansion daughter boards available.

Another alternative is to buy an \$80 DSP-based PC sound card and use that for your DSP platform. The Cardinal Pro 16, Orchid Sondwave 32, and others use the ADSP2115. A really powerful DSP platform with a lot of free applications materials available. Just an example of its performance - a 1024 point FFT in under 3ms.

Once you start playing with these toys, one quickly realize that programming the DSP is just a fraction of the effort - integrating the DSP into any worthwhile application, i.e. using a host PC's resources - thats another story. Having a flexible DSP board plugged into your PC's bus and having access to the interrupt/DMA hardware sure makes life easier and offers lots of possibilities.

My \$0.02 for what its worth. Good luck with your project.

Johan  
KC7WW

-----  
Date: Tue, 9 Aug 1994 20:31:28 GMT  
From: newshub.sdsu.edu!nic-nac.CSU.net!charnel.ecst.csuchico.edu!  
yeshua.marcam.com!zip.eecs.umich.edu!newsxfer.itd.umich.edu!europa.eng.gtefsd.com!  
howland.reston.ans.net!agate!@@ihnp4.ucsd.edu  
Subject: Freq standard from TV Colorburst subcarrier  
To: ham-homebrew@ucsd.edu

In article j85@marconi.jpl.nasa.gov, cyamamot@marconi.jpl.nasa.gov (Clifford Yamamoto) writes:

>Greetings!

>

>Does anyone remember an old Radio Electronics or Popular Electronics  
>article that allowed one to use the colorburst subcarrier of any TV  
>station for use as a frequency reference.

\*\*\*\* I seem to remember reading somewhere that none of the stations are transmitting

highly accurate subcarriers anymore, now that they have digital frame  
synchronization  
hardware. Can anybody confirm or deny?

- Jerry Kaidor, KF6VB

-----  
Date: 9 Aug 94 19:27:08 GMT  
From: ihnp4.ucsd.edu!newshub.sdsu.edu!nic-nac.CSU.net!usc!howland.reston.ans.net!  
agate!headwall.Stanford.EDU!abercrombie.Stanford.EDU!paulf@network.ucsd.edu  
Subject: Handheld and Saltwater...  
To: ham-homebrew@ucsd.edu

One technique that works is to immerse the radio in distilled water as soon  
as possible after the saltwater exposure, for about five minutes, then let it  
dry out.

--  
-=Paul Flaherty, N9FZX | "We are meant to be masters of destiny,  
->paulf@Stanford.EDU | not victims of fate." -- Ronald W. Reagan

-----  
Date: 11 Aug 1994 09:56:21 GMT  
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!spool.mu.edu!torn!nott!uotcsi2!  
vdbergen@network.ucsd.edu  
Subject: HELP: Son needs advice on IR detector  
To: ham-homebrew@ucsd.edu

Fred McKenzie (fred-mckenzie@ksc.nasa.gov) wrote:  
: In article <32ae12INN2n9@oasys.dt.navy.mil>, drake@oasys.dt.navy.mil (John  
: Drake) wrote:  
: > ..... He built  
: > it without those and lo-and-behold it sorta works anyway, but the receiver  
: > is sensitive to the kitchen light too.

If you are looking for IR parts you should get a copy of the

ELECTRONIC GOLDMINE Catalog #222  
P.O. Box 5408  
Scottsdale AZ 85251  
Tel.: (602) 451-7454  
Fax: (602) 451-9495

They sell digital heartrate kits (\$4.50) with an IR sensor

you can play with (two items page 5), IR target kits (\$12.45), and phasor gun kit (\$8.70) page 41.

-----  
Date: 10 Aug 1994 17:18:22 -0700  
From: ihnp4.ucsd.edu!news.cerf.net!gopher.sdsc.edu!nic-nac.CSU.net!ctp.org!not-for-mail@network.ucsd.edu  
Subject: Homebrew Global Positioning System (GPS)  
To: ham-homebrew@ucsd.edu

I need information for a homebrew GPS (Global Positioning System). Books, magazines, references, and internet resources would be extremely helpful. I need information on theory, frequencies and modulation, and circuit schematics. Although I would prefer to build my own, any information about commercially available units would be helpful (specifications, sources, and prices), however I will need to hook the output of the device into other equipment. I am also seeking good information on how to set up an experiential differential GPS system.

-William Moyes  
wmoyes@eis.calstate.edu  
(KC6AR0)

-----  
Date: Tue, 9 Aug 1994 20:00:01 GMT  
From: ihnp4.ucsd.edu!newshub.sdsu.edu!nic-nac.CSU.net!usc!howland.reston.ans.net!noc.near.net!zacias2.ziff.com!tomkreyche.zdlabs.ziff.com!user@network.ucsd.edu  
Subject: Need low thermal coefficient resistors  
To: ham-homebrew@ucsd.edu

I'm working on a project where the equipment will be subjected to extreme outdoor temperatures, and want to keep thermal drift to a minimum. I've been successful getting low drift op amps but they're worthless without low thermal coefficient resistors. Anybody have any sources?

Thanks, Tom Kreyche KG6YJ

-----  
Date: Fri, 5 Aug 1994 14:52:50 GMT  
From: ihnp4.ucsd.edu!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!xmission!u.cc.utah.edu!candy.elen.utah.edu!match@network.ucsd.edu  
Subject: Plastic vs. Metal Transistors  
To: ham-homebrew@ucsd.edu

In article <19940802192559OSYSMAS@MVS.OAC.UCLA.EDU> OSYSMAS@MVS.OAC.UCLA.EDU (Michael Stein) writes:

>From: OSYSMAS@MVS.OAC.UCLA.EDU (Michael Stein)

>Subject: Re: Plastic vs. Metal Transistors

>Date: Tue, 02 Aug 1994 19:25

>>Moulded plastic or metal can? As with most things in life, it  
>>depends...

>I seem to remember reading (Pease?) that some metal cases admit  
>light (around the leads). The TI transistor databook seems to  
>say that the plastic case is opaque (for each transistor def...).

I've never heard it mentioned that the metal cans admit light around the leads, but I've definitely seen plastic package transistors that are not even close to opaque! It just depends on the fillers in the epoxy. Some can be used as photo-transistors! Start smashing plastic transistors of random types from different vendors, hold the shards up to the light and sooner or later you'll find some that are not opaque black, but actually translucent brown.

Marv KA7TPH

-----

Date: Wed, 10 Aug 1994 13:11:10 GMT

From: ihnp4.ucsd.edu!ucsnews!newshub.sdsu.edu!nic-nac.CSU.net!usc!  
howland.reston.ans.net!gatech!wa4mei!ke4zv!gary@network.ucsd.edu

Subject: Question about power supply for HTX-202.

To: ham-homebrew@ucsd.edu

In article <znr776465957k@crl> drice@crl.com (Dennis Rice) writes:

>I just bought (or am in the process of buying) a power supply for my  
>HTX-202. However the power supply is 13.8VDC and 3A. I know the 202  
>works fine at ~13.5VDC and 2A (car battery). Will the slightly higher  
>voltage and amperage cause a problem? If it is a problem, I should  
>just be able to add a resistor in series to get the amperage down,  
>correct?

The nominal voltage of a fully charged car battery is 13.8 volts. That's why most fixed supplies put out that voltage. In a car, the charging system can increase that voltage to 14.5 volts, sometimes even 16 volts, so the radio has to be able to work with that if it can be run off the car. All you care about as far as supply current rating is concerned is if it can put out \*enough\* current. The radio will only draw as much as it needs, so a bigger supply is not a problem.

This is a basic Ohm's Law problem. Model the circuit like this:

```

-----
+|          |
Bat 13.8V    Radio 6.9 ohms
-|-----|

```

Assume the radio is a resistor (it's the load), and that if the radio normally needs 2 amps at 13.8 volts, it has a resistance value of 6.9 ohms. Now it doesn't matter how much current the 13.8 volt supply is \*capable\* of producing, at 13.8 volts it can only push 2 amps through a 6.9 ohm resistor.  $I=E/R$  or  $13.8/6.9=2$  amps. The only way the supply can push more than 2 amps through the radio is if the supply \*voltage\* is increased, or the radio resistance is somehow decreased (it can do that by outputting more RF or AF power). Let's assume a auto charging system voltage of 14.5 volts. Now how many amps will be pushed through the radio? The answer will tell you why higher voltage batteries allow HTs to transmit more power. (Remember  $P=I \times E$ )

Now obviously solid state devices have an upper voltage limit, and exceeding that limit will destroy the device via voltage breakdown and current avalanche. So you never want to use a supply that has a higher voltage than the equipment is rated for. However, most equipment has a built in \*safety\* margin of about 20%, so you can \*usually\* apply a voltage of about 16.5 volts to a 13.8 volt rated radio without destroying it. A few tenths of a volt difference from rated voltage should never be a problem.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

-----

Date: Fri, 5 Aug 94 02:45:00 -0600  
 From: netcomsv!netcomsv!aquila!alan.lyday@decwrl.dec.com  
 Subject: RCI 2950 AND ITS CW NOTE?  
 To: ham-homebrew@ucsd.edu

Hello All. Does anyone know if there is a problem with the Note on CW with the RCI 2950? A friend across town have one and the the Note is Horrible! Thanks ahead of time for any Info related to this unit.  
 \* RM 1.3 00559 \*

-----

Date: 10 Aug 1994 17:25:22 -0500

From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!cs.utexas.edu!not-for-mail@network.ucsd.edu  
Subject: regenerative sets and selectivity  
To: ham-homebrew@ucsd.edu

A recent Popular Electronics article described a regenerative shortwave receiver using a dual-gate MOSFET for the RF oscillator. It is well-known that the regenerative approach significantly increases the Q of the resonant circuit. I was wondering, however, if the Q is sufficient to provide the selectivity needed on the international broadcast bands. Can such a receiver really separate relatively powerful signals spaced every 5 KHz? I would appreciate hearing from anyone who has tried such a circuit for shortwave reception. Is the selectivity as good or better than superhets using a simple ceramic filter?

As a side note, I am interested in building a small, portable, SW receiver, and the simplicity of this approach (filtering via a single tuned circuit) is quite appealing. Any other ideas regarding the building of a small, battery-efficient receiver would be appreciated.

--John

--

*** John Zelle	e-mail: zelle@cs.utexas.edu	***
*** Taylor Hall 2.124	motto : I'd rather write programs which	***
*** University of Texas	write programs than waste my	***
*** Austin, TX 78712-1188	time writing programs	***

-----

Date: 11 Aug 1994 08:17:49 GMT  
From: ihnp4.ucsd.edu!agate!msuinfo!harbinger.cc.monash.edu.au!newsserver.tr1.OZ.AU!pcies4.tr1.OZ.AU!drew@network.ucsd.edu  
Subject: regenerative sets and selectivity  
To: ham-homebrew@ucsd.edu

In article <32bk4i\$pdf@thor.cs.utexas.edu> zelle@cs.utexas.edu (John Marvin Zelle) writes:

>From: zelle@cs.utexas.edu (John Marvin Zelle)

>Subject: regenerative sets and selectivity

>Date: 10 Aug 1994 17:25:22 -0500

>

>A recent Popular Electronics article described a regenerative  
>shortwave receiver using a dual-gate MOSFET for the RF oscillator. It  
>is well-known that the regenerative approach significantly increases  
>the Q of the resonant circuit. I was wondering, however, if the Q is  
>sufficient to provide the selectivity needed on the international  
>broadcast bands. Can such a receiver really separate relatively



>powerful signals spaced every 5 Khz? I would appreciate hearing from  
>anyone who has tried such a circuit for shortwave reception. Is the  
>selectivity as good or better than superhets using a simple ceramic  
>filter?  
>

>--John

>--

>*** John Zelle	e-mail: zelle@cs.utexas.edu	***
>*** Taylor Hall 2.124	motto : I'd rather write programs which	***
>*** University of Texas	write programs than waste my	***
>*** Austin, TX 78712-1188	time writing programs	***

John, from my experience of building regenerative sets, you can obtain quite acceptable AM selectivity for SW BC work. The trick is to adjust the regeneration to the point where the set "takes off", (you will hear a gentle "plop") then back it off again slightly so that the detector just stops oscillating. The better sets have an RF amplifier to isolate the regenerative detector from the antenna (which can cause "dead spots, and maybe radiate an interfering signal).

For SSB and CW reception, the detector is deliberately put into the oscillating condition, where once again, selectivity is quite adequate for most conditions. SSB and CW signals sound remarkably clean by the way (a bit like seeing the sky on a clear night away from the pollution of the city-- signals stand out with a remarkable clarity because there's no mushiness caused by multiple tuned circuits, AGC loops etc).

73, Drew, VK3XU. Telecom Australia Research Laboratories

-----  
Date: 11 Aug 1994 03:22:26 GMT  
From: news.cerf.net!mvb.saic.com!MathWorks.Com!yeshua.marcam.com!  
zip.eecs.umich.edu!newsxfer.itd.umich.edu!gatech!howland.reston.ans.net!agate!  
overload.lbl.gov!lll-winken.llnl.@@ihnp4.ucsd.edu  
Subject: regenerative sets and selectivity  
To: ham-homebrew@ucsd.edu

Regenerative receivers never had and never will have selectivity as good as the superheterodyne receivers. That's why the superhet became so popular. And now most good receivers are double conversion, so they're even better. No matter how high the Q, a single tuned circuit can't have as sharp skirts as several stages of IFs. And then we haven't even talked about ceramic IF filters.

--

```
=====
|      John Lundgren - Elec Tech - Info Tech Svcs      | Standard |
|      Rancho Santiago Community College District      | disclaim- |
|      17th St. at Bristol \ Santa Ana, CA 92706      | ers apply. |
| jlundgre@pop.rancho.cc.ca.us\jlundgr@eis.calstate.edu |          |
=====
```

-----

Date: 11 Aug 1994 17:40:41 GMT  
From: news.tek.com!tekgp4.cse.tek.com!royle@uunet.uu.net  
Subject: SWR calculation needed....  
To: ham-homebrew@ucsd.edu

jcmonier@sacalay.cea.fr (Jean-Christophe MONIER):

:In article qq8@goofy.iaccess.za, briane@goofy.iaccess.za (Brian Ellse) writes:  
-->. . .  
-->Can somebody please tell me the formula for calculating SWR when given only  
-->the forward and reflected power in watts.  
-->  
-->                  i.e Bird Inline reads 15w forward and 6w reverse. SWR=?  
-->. . .

:Brian,

:      SWR = ( Forward + Reverse ) / ( Forward - Reverse )

:      With Forward = 15 W and Reverse = 6 W , SWR = 2.33 / 2

Yikes. This isn't correct when dealing with powers. (It is correct for forward and reverse voltages.) For powers,

$$\text{SWR} = ( \sqrt{P_f} + \sqrt{P_r} ) / ( \sqrt{P_f} - \sqrt{P_r} )$$

where Pf and Pr are forward and reverse power, respectively. 15 watts forward and 6 reverse is an SWR of 4.44.

Roy Lewallen, W7EL  
roy.lewallen@tek.com

-----

Date: 11 Aug 94 02:48:06 GMT  
From: news.iiij.ad.jp!tyo-noc-news!jh1ynw!marina!kohjin@uunet.uu.net  
To: ham-homebrew@ucsd.edu

References <776304324snz@arkas.demon.co.uk>, <8AUG199416550806@pavo.concordia.ca> ,

<326146\$bds@nntp.crl.com>

Subject : Re: NEC simulation software

Try ftp.ucsd.edu;

hamradio/nec:

total 1088

-r--r--r--	1 root	488191	Feb 29	1992	nec2.in.c.tar.Z
-r--r--r--	1 root	294119	Jan 31	1992	nec-2.f
-r--r--r--	1 root	2534	Jan 31	1992	nec-2.doc
-r--r--r--	1 root	4932	Jan 28	1992	nec.note
-r--r--r--	1 root	294131	Jan 28	1992	nec-2.f.image

Good luck, Kohjin

--

*----/----*	Kohjin Yamada, JR1EDE	[kohjin@marina.prug.or.jp]
Q-----T-----H	504-55 Shimo-Yamaguchi,	Hayama, Miura, Kanagawa, Japan
*-----/ -----*	Phone:+81-468-75-6750	Fax/Modem/Voice:+81-468-76-1176

-----

End of Ham-Homebrew Digest V94 #232

\*\*\*\*\*